Pest Alert

United States
Department of Agriculture

Forest Service

Northeastern Area
NA-PR-03-02

New Introduction: The Red-haired Bark Beetle, *Hylurgus ligniperda* Fabricius (Coleoptera: Scolytidae)

Discovery: An overwintering colony of adult Red-haired Bark Beetles (*Hylurgus ligniperda* Fabricius) was discovered in November 2000 near Rochester, New York. These European beetles were found during an evaluation of white pine root decline in a Christmas tree plantation. *Hylurgus ligniperda* was intercepted 169 times at ports of entry in the United States between 1985 and 1994. Excluding these interceptions, individual beetles had only been caught in detection traps in 1994 and 1995 about 15 miles west of the current infestation. The positive trap catch in 1994 occurred in a pine stand damaged by a winter storm in 1991. The lag time between the first detections and the discovery of an overwintering colony might well reflect how long it takes a recent introduction to reach a damage-detectable threshold.

Figure 1: Aggregation of overwintering *Hylurgus ligniperda* inside a pine stump.

Description: *Hylurgus ligniperda* is a bark beetle that is best known for attacking stumps, freshly cut logs, and recent logging slash. Because of this behavior, it might not appear to be a serious threat to North American forestry. However, the species has a proven ability to spread globally and has a large host range including pine species, spruce, true firs, Douglas fir, and larch. In recent years, this European beetle, has successfully established itself in South Africa, Japan, Australia, New Zealand, Brazil, Uruguay, and Chile. Much of this recent spread is attributed to the increased global trade in conifer logs.

Figure 2: Habitus of *Hylurgus ligniperda* Fabricius, lateral view.

Hylurgus ligniperda is a small beetle (Figures 1 & 2) about 2mm wide by 6mm long and looks black. Under magnification however, a covering of reddish hairs can be seen; the character responsible for its common name—the red-haired bark beetle. The hairs are particularly noticeable on the posterior slope of the wing covers (elytra) (Figure 3b). By comparison, *Hylurgus ligniperda* is significantly hairier than *Tomicus piniperda*, the European pine shoot beetle, (Figure 3a) and lacks the teeth/spines/bumps that line the margins of the posterior abdominal concavity of *Ips pini* (Figure 3c).

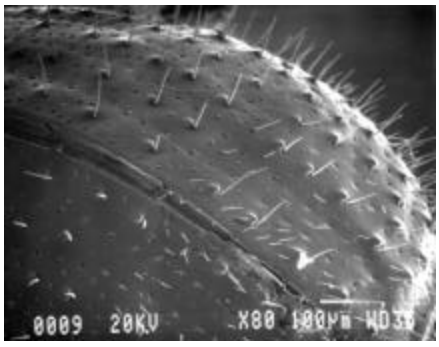

Figure 3a: Elytra of *Tomicus piniperda* showing simple rows of erect hairs (setae).

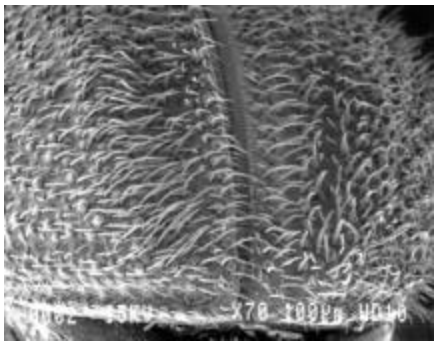

Figure 3b: Elytra of *Hylurgus ligniperda* showing confused, erect hairs (setae).

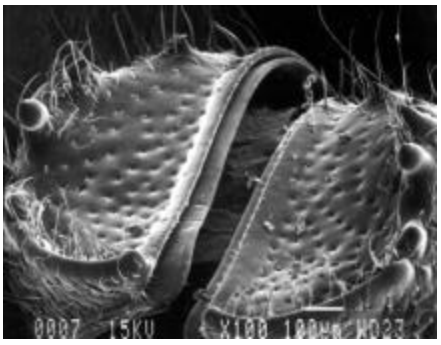

Figure 3c: Elytra of *Ips pini* showing lateral spines on the posterior abdominal concavity.

Life Cycle: The female beetle enters the bark and constructs a short entrance tunnel and an oblique nuptial chamber cut in the phloem. After mating in this chamber, the female constructs a single, long egg gallery. The gallery may wander and even double back on itself, but generally follows the wood grain and may be over a meter long. Eggs are laid in individual notches along the single gallery. After laying the first batch of eggs, the female may extend the gallery for another 10 to 20 cms and lay a second batch of eggs. Larval galleries, initially at right angles to the egg gallery, soon become random and thus do not create a distinctive gallery pattern. There are four larval stages. When the larvae are fully grown, they pupate at the end of their tunnels. Adult beetles frequently overwinter communally (see Figure 1). For example, a piece of a white pine stump from Rochester, NY, 3 inches long by 3.5 inches in diameter yielded 83 overwintering adult beetles. There has been one report of overwintering adults girdling and killing young trees in Spain, and another, from Chile. However, in most countries where this beetle has established itself there has been no tree mortality attributed to it.

The Fungal Connection: Two species of the forest pathogen, *Leptographium*, have previously been associated with this bark beetle. Both *L. truncatum* and *L. procerum* have been isolated from New Zealand populations of *Hylurgus ligniperda*. *L. truncatum* has been reported from Canada and *L. procerum* has been implicated in white pine root decline in the United States. Inoculation studies indicate that both of these fungi are not particularly virulent pathogens. However, in combination with an attacking bark beetle, these fungi could cause significant tree decline. These fungi should be described as weak pathogens that have the potential to be destructive if linked with a suitable bark beetle attacking stressed conifers. The frequency with which *Leptographium spp* have been recovered from *Hylurgus ligniperda* beetles would suggest that in other countries at least, such a partnership has already developed. Initial isolations from the recently discovered *Hylurgus* population have yielded *Leptographium*. Overwintering gregariously, in tunnels in the bark of the root collars or larger roots, adults could easily cross contaminate each other with fungal spores. Additionally, in Chile *H. ligniperda* has been observed feeding on the root collars of one- to two-year-old seedlings.

The most virulent American species of *Leptographium* is *L. wageneri*, a western species. Should *Hylurgus ligniperda* reach the conifer forests of western North America and begin to vector *L. wageneri*, the forest disease dynamics would shift dramatically and a bark beetle seen as a tolerable nuisance in the East, could become a serious pest in the West.

Photo Credits: J.F. Cavey, S. Passoa, & E.R. Hoebeke

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Web Sites containing more information;
http://www.forestresearch.co.nz/largetext.cfm
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http://spfnic.fs.fed.us/exfor/